THE COMMONWEALTH OF MASSACHUSETTS

WATER RESOURCES COMMISSION

# Meeting Minutes for January 10, 2002

***Members in Attendance:***

| | |
|---|---|
| Mark P. Smith | Designee EOEA |
| Marilyn Contreas | Designee DHCD |
| Richard Thibedeau | Designee DEM |
| Cynthia Giles | Designee DEP |
| Mark Tisa | Designee DFWELE |
| Joe McGinn | Designee MDC |
| Joe Pelczarski | Designee CZM |
| Richard Butler | Public Member |
| Gary Clayton | Public Member |
| David Rich | Public Member |
| Frank Veale | Public Member |

***Others in Attendance:***

| | |
|---|---|
| Steve Garabedian | USGS |
| Dave Armstrong | USGS |
| Todd Richards | DFW |
| Duane Levangie | DEP |
| Tom Lamonte | DEP |
| Steve Hallem | DEP |
| Peter Phippen | Watershed Design |
| April Bowling | IRWA |
| Joan Kimball | DFWELE Riverways |
| Chris Carney | DFWELE Riverways |
| Margaret Kearns | DFWELE Riverways |
| Rachel Calabro | DFWELE Riverways |
| Paul Lenz | DEM OWR |
| Lorraine Downey | MWRA |
| David Webster | EPA |
| Ralph Abele | EPA |
| Robert P. Schreiber | CDM |
| Andrew Miller | CDM |
| Dwight Dunk | CDM |
| Kathy Rich | Public |
| Rich McHorney | TNC |
| Pine DuBois | JRWA |
| Kellie O'Keefe | DEP |
| Nina Danforth | DEM OWR |
| Mary Jo Feuerbach | EPA |

| | |
|---|---|
| Ron Sharpin | MDC |
| Jessica Stephens | Neponset River Watershed Association |
| Kerry Mackin | IRWA |
| Rebecca Cassotis | EOEA MWI |
| Gerard Kennedy | DFA |
| Brendan Zubricki | Town of Essex |
| Kelly Whalen | URS Corp |
| Mike Gildesgame | DEM OWR |
| Jackie Murphy | EOEA |
| Glenn Haas | DEP |
| Piotr Parasiewicz | Cornell Instream Program |
| Michele Drury | DEM OWR |
| Linda Marler | DEM OWR |

## ***Agenda Item #1: Executive Director's Report***

- Smith discussed funding of USGS gages by MDC. The legislature developed MDC's budget by funding line items and inadvertently left off funding for the stream gages. There are 16 gages that have not been funded; therefore USGS has pulled the data from the web. The MDC is currently looking for funding sources for these gages and we expect that these gages will ultimately be funded. Many people have called to express concern about this situation. This is a serious issue because these gages are on rivers which have flooding, as well as other issues.
- In December, Mass Insight, a think tank, held its annual conference on infrastructure issues, including water issues. There were some very good speakers, including Treasurer O'Brien, who gave the key note speech. This is an effort to raise awareness of the need for public funding on all levels for infrastructure improvements.
- The Drought Management Task Force recommended that a drought advisory be posted for whole state. The Task Force meets next Tuesday to assess the situation.
- There has been a reorganization at EOEA. The Secretary has created a forest division program and forest policy director position. Smith has been put in charge of the Watershed Initiative. This is part of a larger look at how water issues are organized. We are thinking about creating a Watershed Division in EOEA to combine the WRC, WSI and MDC watershed programs. It makes sense to more closely align these programs.
- Haas addressed Holden's the water conservation conditions of the WMA, to update the WRC on issues raised last month. They are in compliance with these conditions.

The hydrologic report was postponed to later in the agenda.

## ***Agenda Item #2: Vote on the Staff Recommendation for Essex's Request for Determination of Insignificance under the Interbasin Transfer Act***

This project was covered in some detail at the last meeting. The town of Essex is proposing to sewer a portion of town. Through the MEPA process for this project, several alternatives were investigated, including, on-site septic systems, alternative innovative septic systems, and in-town wastewater disposal to both ground water and surface water; for a number of environmental reasons these were all deemed to be unsuitable.

There were questions about cumulative impacts of sewering Long Beach in Rockport and the Essex project. Staff explained that the North Coastal Basin does not function as other typical basins, such as the Taunton River basin, where smaller streams feed into a mainstem. Rather, the North Coastal basin is a grouping for the small coastal streams which drain into the ocean. Based on this, it was concluded the Rockport and Essex sewer projects would not impact each other.

The Essex project proposes to transfer up to 0.225 mgd from the North Coastal basin to the Massachusetts Coastal Basin via sewering to the Gloucester Wastewater Treatment Plant. The town is under a court judgement to address their wastewater problems. The town has serious Title V problems, especially in the areas proposed to be sewered. Thibedeau stated that DEM worked very hard with the residents around Chebacco Lake in Essex to address their wastewater problems, which are causing eutrophication in Chebacco Lake. The town was investigating innovative and alternative septic systems, but apparently the lots are too tight, the areas are too small, and the soil is not very good. The EIR addressed these issues and was reviewed as part of the Interbasin Transfer Act review.

The streams in the area have very little flow in the summer months, in five of the subbasins proposed to be sewered, the water supply originates in another portion of the basin. There is concern about Alewife Brook subbasin. The subbasin provides water supply for both the town of Essex and for Manchester-by–the-Sea. Most of the water coming out of that subbasin goes to Manchester–by-the-Sea, but this transfer is not subject to the Interbasin Transfer Act because it all remains within the North Coastal basin.

The Essex project meets the Interbasin Transfer Act regulations' criteria for insignificance from and will result in a net improvement of water quality. **Staff recommends that the Commission find this project to be insignificant.**

Commission members asked about the potential for additional growth and development and increased additional withdrawals from Alewife Brook subbasin. Alewife Brook has intermittent flows or variable flows during the summer months, and the question was raised as to whether this transfer a small but cumulative impact that may lead to a negative impact.

The cumulative impact on Alewife Brook is 0.07 mgd. The town addressed EO385 issues and growth issues in their EIR. As a result, they have incorporated stringent controls to limit the amount of sewer hook ups in this area. They are restricted both by the size of sewer connection to Gloucester and by the inter-municipal agreement with Gloucester which governs the amount of sewage they can transfer. The potential for additional withdrawals from Manchester-by-the-Sea were not investigated because this is beyond the jurisdiction of the Interbasin Transfer Act. It is not known if Manchester is looking for increased withdrawals from this subbasin. Withdrawals by Manchester-by-the-Sea represent the major transfer out of Alewife Brook and can be more appropriately controlled under the Water Management Act program.

Commission members asked if the analysis by Marine Fisheries looked closely at the issue of water quantity as it impacts the fisheries resources, or were they more concerned with the water quality problems in Essex Bay and in the harbor itself.

Staff responded that DMF is quite concerned about the water quality problems from failing septic systems in Alewife Brook and downstream in Essex Bay. Their preliminary comments focus on water quality. Rusty Iwanowicz of the DMF Gloucester Office was contacted about water quantity issues and stated that the improvement in water quality would far out weigh any incremental loss of water quantity resulting from this transfer.

Smith stated that the transfer is small, well under 1 mgd. The Commission is required to look at the environmental impacts under a Request for Determination of Insignificance; staff did take the time to make sure the issue was addressed. It is important that the Commission understands that.

A Commission member stated that one issue raised by Commissioner Contreas was that the purpose of the Interbasin Transfer Act was to limit transfers and one way to do that is by limiting connections so that out-of-control new development does not occur. The other issue is the provision of affordable housing by communities. The concern was that decisions under the Interbasin Transfer Act might inadvertently be used to limit the provision of affordable housing. We would like to add some language to the recommendation so that the Interbasin Transfer Act is not used as a reason to not develop affordable housing.

Commissioner Contreas responded that DHCD had some concerns about the very low subsidized housing inventory in Essex (3.2%) and in Gloucester (7%). This sewer opens up the possibility for limited development in Essex and Gloucester. The inter-municipal agreement, which DHCD reviewed, but did not have authority over, noted that potential growth was stated as 70 single-family residential homes with one sewer unit each. This does not address diversity of housing supply and potential affordable housing which may result with small multi-family units in place of 70 single family residential homes. DHCD is very concerned about diversity of housing supply and asks other state agencies and communities to be cognizant of the need for the diversity of housing supplies.

Smith remarked that affordable housing is not an issue under the Interbasin Transfer Act; however, it would be a shame if others used the Interbasin Transfer Act as a reason not to provide affordable housing. Contreas read the language proposed for the staff recommendation and finds that the recommendation encourages the development of affordable housing if there is going to be development.

| | |
|---|---|
| **V O T E** | Butler moved with a second by McGinn to approve the Staff Recommendation of insignificance for the town of Essex.<br><br>The vote to approve was unanimous of those present. |

## ***Agenda Item #3: Vote on the WRC Work Plan for 2002***

The Work Plan has not been changed since last month, with the exception of adding a sentence about the water assets project to make clear that we are not just talking about land protection, but that we are also interested in demand management, keeping water local etc. Smith went through the work plan. The Commission's primary task is the water assets project to help communities plan for long-term water supply needs. Next is to continue working on outdoor water use issues. We are producing a new guidance document for the Interbasin Transfer Act. This is underway. Our next project is to continue to update Interbasin Transfer Act regulations. We will also

continue to work on stressed basins, including the habitat piece. We also plan to finalize the drought management plan and to track the MWRA expansion plan. Finally, we will continue to work on biological conservation.

Clayton stated that he was supportive of the tasks, but asked for a timeline linked to the WRC schedule. We need to have specific deadlines. A number of the tasks are unclear as to the product. This also needs to be clarified and tied to the WRC schedule.

Contreas suggested an edit to the water assets project. There is concern in the communities about using the buildout analyses, as these are not realistic. Contreas suggested using population projections as well.

| | |
|---|---|
| **V O T E** | Clayton moved with a second by Veale that the WRC approve the 2002 Work Plan.<br><br>The vote to approve was unanimous of those present. |

## ***Hydrologic Conditions Report (continuation of Agenda item 1)***

- MEMA and EOEA issued a drought advisory on December 28th because of the dry conditions which developed over the fall.
- December was a much better month for precipitation. We added about three inches. This is not up to normal, but it is better than what we had gotten in the previous months. December was about a 75% month.
- Deficits from December are about an inch across the state. For the three month percent of normal, we are well below 65% and for the six month percent of normal, we are near the 65% threshold, with the exception of the western region, which is still doing pretty well. We just eliminated June from the six month calculation. In June, we had tropical storm Allison, which brought quite a bit of rain to the coastal areas. So if you compare last month's six month deficit with this month's six month deficit, there will be a dramatic difference because the June rainfall is no longer included in the calculations. If you look at the 12 month figures, however, they don't look too bad. This supports our contention that this is not a long-term drought. This situation started this August. It is just a few months of dry conditions. However, conditions are continuing to "slide down" so we will be monitoring the situation. The Drought Management Task Force is meeting again next Tuesday. We will discus the need to revise drought level.
- Ground water levels remained below normal; this is the same with surface water runoff. Both these conditions are due to low precipitation. Even though we had a few good storms in December, the hydrographs only increased for a very short time. This reflects the several months of rainfall deficit we've been having. We will need to make gains on the precipitation deficit before streamflow starts coming up.
- Streamflows are at 38% of the median flow. This is quite a bit below normal. Streamflows are up since December, however.
- Reservoir levels are still below normal, but between December and January, they've stabilized. Most of the water suppliers are concerned for the near future. Water suppliers are starting to put on water bans.

- The National Weather Service is not predicting any storms. Long term predictions for the spring are inconclusive. We need above normal precipitation. The Weather Service put out a drought advisory. The USGS issued a water resources statement which discussed low ground water levels.

## ***Agenda Item #4: Presentation: Developing a Target Fish Community to Assess Ecosystem Integrity***

Richards stated that this was developed in Quinebaug River basin. Fisheries staff has taken this model and applied it to the Ipswich River. The objectives are: to provide a methodology to describe the characteristics of a healthy stable river fish community; to provide a realistic expectation for Massachusetts rivers; and to provide a measurable goal for restoration.

The first step would be to find rivers that are similar to Ipswich, but without the hydrologic stress. Next, we measure the fish communities in these ecosystems and compare them to determine how well the Ipswich compares with a healthy river. If similar rivers are not available, we can use a previously developed target. However, this may not be realistic for the Ipswich. We can modify this target with additional information to determine the target fishery for the Ipswich River.

Massachusetts Ecoregion Project listed 48 streams within the Ipswich Ecoregion. Twenty-seven of these are coastal rivers. This is important for the Ipswich River. The watershed areas of these streams were much smaller than the Ipswich watershed area. However, the concept exists that the upper portion of watershed might compare favorably with the reference sites. There are two streams within the Ipswich watershed that could be used: Boston Brook and Fish Brook. We looked at fish population in these streams to see if they could be used as benchmark for the Ipswich River. There were flow issues in Boston Brook during the year of the study, so this stream was rejected as a reference stream. Fish Brook was dry, so this was also rejected.

Then, staff looked at information from the Quinebaug River, previously developed through a comprehensive interstate effort involving state and federal agencies. Research was conducted under the aegis of Cornell University. The guidelines which defined the target fish community were that it be appropriate for a natural river in southern New England. They didn't look at pristine conditions, because they wanted to keep it realistic. The basic assumption was biological integrity should be maintained. This was defined as a balanced, integrated, adaptive community. The overriding assumption is that rivers should have river fish communities, instead of pond-type fish communities. They assumed that a river might have dams on it, but the fewer of these the more "natural" the fish community will be.

Habitat use categories (HUC):

- Fluvial specialists require flowing water to meet life cycle requirements. They need flowing water year round in Massachusetts.
- Fluvial dependants need flowing water at least some part of their life cycle. At other times, they can handle ponded conditions.
- Macro-habitat generalists, pond fish, do not need flowing water for life stage requirements.

The analysis stayed away from anadromous/catadromous species because they only spend a short portion of their life cycle in the ecosystem. However, they should be considered separately.

Cornell started out with a comprehensive list of fish that could possibly live in the basin. This is a basic, starting framework. Then we took information from many "quality" rivers. These are not the same as a "reference river", but were recommended to be studied because they are in decent condition. These are surrogates for true reference rivers. The data was provided to Cornell for analysis. They identified the most common species. Statistical analyses came up with the expected types of fish and their proportions in the target fish community.

The Ware River and Housatonic Rivers were used as "quality rivers" in Massachusetts. The relative abundance of fish were assessed by ranking and resulted in expected proportions of the different types of habitat-use categories.

The Quinebaug process was modified based on coastal quality rivers to reflect the fish that would be expected in Ipswich River. The Lamprey River in New Hampshire was evaluated to add some species expected in the coastal region. The results are similar, but some other species are added . One would expect 29% macro-habitat generalists, 20% fluvial dependants and 51% fluvial specialists.

Project Staff sampled fish in Ipswich River to assess the current fish community. Almost all of the fish identified in the Ipswich River were macro-habitat generalists. This does not represent a river fish community. It compares more favorably a pond-fish community. The Ipswich River is flow stressed. The fish populations document this. In comparison, fish in the Millers River were closer to the goal, with 51% macro-habitat generalists, 28% fluvial dependents, and 21% fluvial specialists. Target communities provide a reasonable way of comparing resources.

Management implications:

- Fish sampling allows assessment of current condition
- Target communities allow us to describe a healthy stable fish community
- Target communities provide a measurable goal for restoration
- This could be used in stressed basin applications.

Ongoing work will be applied statewide via the watershed cycle. Over the course of the next several years, the project should allow a determination of the existing fish communities; the next step will be targeting high priority sites and getting input form state and local groups. The effort is to make sure there is a variety of habitat types in each watershed.

Clayton asked what is protocol for establishing sampling stations. How do you avoid introducing bias in the choice of sampling stations? Richards answered they try to sample in proportion to habitats available in the watershed.

## ***Agenda Item #5: Presentation: Assessment of Habitat, Fish Communities and Streamflow Requirements for Habitat Protection in the Ipswich River***

Armstrong stated that the report documenting this work was available on the USGS website. The Ipswich River has dried up several times in the past four to five years. The study had three objectives: identify sites critical for habitat purposes; identify and locate sampling spots; determine how much water is needed to maintain habitat.

They needed to study the river to determine its characteristics. In reaches where habitat is important to fisheries, the stream margin conditions are important. Forested canopies where trees fall into the stream, but remain attached to banks are important. Sand channel reaches have undercut banks. Where flow is an issue, these types of habitat are not available to fish. You need to have stream margin habitat to provide cover for fish. There are many other types of habitats in the river, but these sites are the most important sites because they quickly reveal habitat losses when the channel is dry. We tried to determine the flows to be maintained in these habitats and over riffles. If you maintain flow over riffles, you will maintain flow in other habitats.

You cannot maintain a single streamflow all year. You need a varied flow in the river, year round. But this study focused on low flow. At very low flows, the habitat of the stream margin is gone.

Project staff had six study areas and used five methods: The Tennant Method based on percentage mean annual flow. Average flow in a basin is determined by drainage area. Thirty percent of the mean annual flow is considered fair habitat; the NE Aquatic Base Flow method, based on the monthly median flow for August. This only works if the flows are known. The Wetted perimeter method tells you what flows are needed to provide flows to a certain area in the stream; the R2cross or Colorado Method, based on stream width, depth and velocity of water needed for fish passage over the riffle. We also evaluated the IHA (Indicators of Hydrologic Alteration) method.

Things aren't constant from upstream to downstream along the Ipswich River because of differences in geology. What does this mean for year round flow? You need to look at the range of flows for each month. The values we came up with for riffle sites fall within the 0.44 cfsm range. But to determine the range of flows needed year round, you need to consult with different methodologies.

Some preliminary recommendations to maintain stream health and biodiversity include:

- Maintain flows in riffles
- Maintain stream margin habitat
- Maintain a varied flow regime that mimics the natural flow regime

Staff are trying to take approach statewide, but it is important to remember that we are still in the study phase. The methodology should be used cautiously.

Meeting adjourned

---

Minutes approved 4/8/04